REMARKS

Claims 1-22 were pending in this case and all stand rejected. Reconsideration is required.

Claims 1, 2, 5-7, 10, 12, 13 and 21 stand rejected under 35 U.S.C. § 102 as anticipated by Froggatt. The Examiner points to Froggatt FIG. 1.

Claims 3, 8, 9, 11, 14-17 and 22 stand rejected under 35 U.S.C. § 103 as unpatentable over Froggatt.

Claims 4 and 18-20 stand rejected under 35 U.S.C. § 103 as unpatentable over Froggatt in view of the publication by Guan et al. The Examiner states that Guan et al. discloses curve fitting as a means of determining the parameter determined.

The claims have been amended to better point out aspects in accordance with the present invention and it is respectfully submitted are now patentable over the references of record.

Specifically, independent method Claim 12 has been amended to include subject matter of Claims 18 and 19 and additional subject matter directed to the method of analyzing the data as set forth in the specification in the paragraph beginning at the bottom of page 14 and carrying over to page 16 at the top. This method includes first establishing a threshold level for the response signal to isolate the peaks. Then as indicated at the top of page 15 an algorithm is applied which is a Full Width Half Maximum (FWHM) determination to identify the FWHM of at least one peak **62,** as shown in FIG. 2C of the present application. Then the analysis module applies a centroid detection algorithm to identify a centroid **72** shown also in FIG. 2C of each peak. Next using the parameters thereby identified, a fit such as a best fit curve is made to each peak of the response signal. The fit can be one of the known polynomial, Lorentzian or Gaussian fits.

It has been found that this particular method provides an ideal way of finding and fitting a curve to the peaks and thereby best determining the physical parameter for the optical sensor.

Claim 12 has been amended to improve its form by eliminating the reference characters a), b), etc. and further by adding (end of the claim) acts directed to the above analysis process.

It is respectfully submitted that the reference cited by the Examiner relating to this analysis process and corresponding Claims 18-20, which is Guan et al., does not meet these acts as now recited in Claim 12.

Guan et al. is vague about his actual analytical approach. Guan et al. does describe Gaussian-Newton curve fitting in conjunction with analysis of measurements from a Fiber Bragg Grating sensor. Guan et al's reference to this type of fitting is repeated, see the legend to FIG. 5 and the top of page 16 and the Conclusion. However no further details are given.

While it is acknowledged that function and curve fitting generally is well known in conjunction with sensor data analysis, it is not seen how from any of the cited references the specific acts now recited in Claim 12 are met or even obvious.

Therefore it is respectfully submitted that Claim 12 as amended distinguishes over the references and is patentable.

Dependent Claims 14-17, 20 and 22 are amended to improve form and are allowable for at least the same reason as is base Claim 12.

There is a second inventive aspect in accordance with the present application to which amended Claim 1 is now directed. Rather than being directed to the analysis method, Claim 1 as amended is directed to the apparatus shown in present FIG. 1 where the wavelength meter 40 is connected between the tap 36 and the laser tuner 20 to provide feedback to the laser source 14 for accurately controlling the emission wavelength. As pointed on the present application in the paragraph in the lower portion of page 10, "...fiber **28** is connected to a wavelength meter **40** for monitoring emission wavelength...of radiation **16**. More precisely, since laser tuner **20** is a sweeper, wavelength meter **40** is a sweep meter for monitoring the sweep of emission

wavelength...across wavelength range.... Sweep meter **40** is connected to sweeper **20** to provide feedback, e.g., for adjusting the sweep."

Additionally as shown in FIG. 1 there is the analysis module 52 which carries out in one embodiment the activity described above in conjunction with Claim 12, but not so limiting.

It is respectfully submitted that this arrangement is not met by the Froggatt reference. Froggatt uses a different control approach as shown in his FIG. 1 where he has control system 12 driving the laser controller 20 and thereby laser 22. Feedback is provided at tap 30 of a portion of the light back to detector 16 and hence to DAQ 14 and hence to the control system 12.

However this is not the same arrangement as in accordance with present FIG. 1 and current Claim 1. Froggatt processes the feedback data in a significantly different way then in accordance with the present invention, using his DAQ 14. In Froggatt use of the reference data from the reference sensor 16 is such that it is processed in conjunction with the measurement sensor 18. The method of using the reference data and the measurement data is set forth in detail in Froggatt at column 7, line 30, carrying over to column 8, line 36. In all cases in Froggatt the reference data is processed in conjunction with the measurement data in order to identify each wavelength change using the phase advance graph shown in FIG. 4 derived from the reference data. See Froggatt column 8 beginning line 20:

> The next step of the method of the present invention comprises pairing or matching each point in measurement interference fringe array with a point in the phase advancement graph shown (FIG. 4). The measurement fringe array comprises sampled values of the measurement interference fringe.... Such a point-to-point matching results in a measure of each measurement infringe as a function of wavelength change. This pairing or matching step produces an array of calibration data for use in determining the actual strain on the Bragg gratings.

The phase advancement graph of FIG. 4 is determined by use of the reference data as pointed out immediately above at Froggatt column 8 beginning line 10:

> Referring to FIG. 4 the conversion to polar representation and phase unwrapping yields a graph of the advancement of phase as a function of time or sample number.... As a result, the precise wavelength change of <u>reference optical fiber **42**, with respect to the starting wavelength of each sweep, is known at every sample point</u>. (Emphasis added.)

Thus Froggatt is using the feedback data in direct conjunction with the measurement data and his phase advancement graph for calibration purposes at each point.

The function of the elements in present FIG. 1 and Claim 1 differ from this. Specifically present Claim 1 now calls for "a wavelength meter coupled to monitor said emission wavelength; means for varying said emission wavelength coupled to said wavelength meter;"

No such structure is present in Froggatt. In his system, the reference data is used to linearize the wavelengths, separate from the actual measurement data acquired from the measurement detector. There is no one-to-one pairing of the data from the reference detector with data from the measurement detector. Clearly Froggatt does not have the wavelength meter recited in Claim 1 due to the difference in his control approach and data analysis.

Therefore in at least this respect Froggatt fails to meet Claim 1 and moreover fails to make Claim 1 obvious since there is no suggestion to modify Froggatt to have the wavelength meter as recited in Claim 1.

Claim 1 is therefore patentable over Froggatt.

Claims 2-11, dependent upon Claim 1, are amended to improve form and allowable for at least the same reason as the base claim.

Therefore it is respectfully submitted that this case should be passed to issue with all of now pending Claims 1-17 and 20-22 allowed.

If the Examiner contemplates other action please contact the undersigned at the telephone number given below.

Representation

The undersigned is in the process of becoming attorney of record in this case. If that process is not complete as of the time of filing this paper, this paper is submitted under Rule 34.

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Respectfully submitted,

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